cited from the treatises of Shaler and Pickering.

In conclusion, let me remark that even though we can not go to the moon to see for ourselves what its temperature may be, or whether gravitation acts there as here, or what may be the power of the sun's unabsorbed radiation, we are gifted with reason and can form for ourselves just conclusions from observed facts. Otherwise all astrophysics would be impossible.

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May, 1912

THE ORE DEPOSITS OF WESTERN UNITED STATES

AMONGST the valuable publications issued by the United States Geological Survey is Mr. James M. Hill's Bulletin 507 with the misleading title "The Mining Districts of the Western United States," as it deals solely with the metalliferous mining districts. These districts are grouped and numbered in each one of the 13 states considered, and their distribution is shown upon 14 maps. The text gives for each district its chief rocks and metalliferous products, the publications of the Survey relating to each one, and the distance and direction of the nearest railroad station, etc. A full index of all the districts mentioned concludes the work, which should be in the hands of every one interested in the ore deposits of the west.

To the general student of metalliferous deposits probably the most instructive portion of the bulletin will be the "Geologic Introduction," by Professor Waldemar Lindgren, late chief geologist of the Survey, present head of the Department of Geology of the Massachusetts Institute of Technology, and one of our foremost mining geologists.

The evidences of the mineral wealth of the Cordillera are found extending territorially from the Pacific shore of United States eastward to western Texas and Oklahoma, and geologically from the Pre-Cambrian to the Recent.

Since the deposition of ores is due to geologic agencies, it is pointed out that in the Cordilleran region, where the rocks are horizontal and undisturbed, the ore deposits are missing or rare and poor. Again, while the metallites occur mostly in the mountain ranges, yet many, even of the highest, are barren; showing that without other conditions, uplift, faulting, and crushing of the rocks, and the circulation of water through them does not always produce ore deposits.

Characteristic important deposits are where Paleozoic sediments have been traversed by moderate-sized eruptive masses of Cretaceous or Tertiary age, the ores apparently being deposited shortly after the intrusion. A less common but often rich deposit is found in Tertiary andesitic and rhyolitic flows.

All these deposits are believed to have been formed by water solutions—largely in fissure veins, chambers, and impregnations. The ores, except gold and its tellurides, were apparently originally deposited as sulphides of lead, iron, zinc, etc., or oxides of iron; but down to or below the permanent water level, which varies from a few hundred to 2,200 feet, these sulphides have been oxidized to cerussite, hematite, calamine, etc. Just below the oxidized zone occur secondary sulphides, like chalcocite and silver-bearing minerals, concentrated by the percolating waters, often into bodies of great richness.

Professor Lindgren gives under each state a more detailed summary, but space does not allow us to continue further, and any one interested can procure a copy by writing to the director of the Geological Survey at Washington.

Without intending to be captious it is suggested that in future editions the term "ores" should be used for "metallic ores" (see pp. 7–9), because there are no ores that are not metalliferous. In the same way "mineral deposits" ought not to be used for metallites or metalliferous deposits when the author intends to exclude the memetallites or non-metalliferous deposits (see pp. 5–9).

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